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ABSTRACT

The technical specifications for educational technology in the state of Mississippi which are contained in this publication represent the minimum criteria for utilization of the equipment. Information is provided for PC (personal computer) and Macintosh platforms where applicable on: workstation specifications; multimedia/teacher presentation systems; cross platform workstations; laptop computers; network specifications; file/print or Internet servers; network wiring systems; compatible printers; Internet providers; tape backup units; CD-ROM systems; uninterruptable power supplies; and other external equipment. (AEF)

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ED 404 993

# Technical Specifications

# MISSISSIPPI

Council for Education Technology

Mississippi Department of Education
Office of Educational Technology

Department of Information Technology Services

Revision # 1
February, 1996

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# TECHNICAL SPECIFICATIONS

## Revision # 1

The Technical Specifications listed in this publication were developed by the Common Needs Sub-Committee and the Technology Specifications and Operations Capacity Sub-Committee of the Educational Telecommunications Concept Committee. These specifications represent the **MINIMUM** criteria for utilization of the equipment listed. *These minimum specifications have been adopted by the State Board of Education and the Council for Education Technology as required by SB 3350 on October 20, 1995.* Other equipment will be added on a semi-annual basis or as needs and emerging technologies dictate. This handbook is referenced in **APPENDIX D** of the ***Mississippi Master Plan for Education Technology***.

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**February, 1996**

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# WORKSTATION SPECIFICATIONS

## PC PLATFORM DESKTOP

- MS-DOS Operating System with utilities, version 6.22 (or latest release)
- Windows 3.11, or Windows NT Workstation 4.0, or Windows 95
- PCI/ISA bus motherboard - minimum of 2 ISA/ISA shared vacant expansion slots after full base configuration to include network interface card
- One front accessible drive bay available after the base configuration to accommodate a second peripheral such as a CD-ROM
- System unit with 8 MB RAM - (two 4 MB SIMMs) expandable to 128 MB RAM on the motherboard with 72 pin SIMM sockets
- Pentium 75 Mhz microprocessor
- One 3.5" high density floppy disk drive (1.44 MB)
- One 850 MB hard disk drive with EIDE or SCSI controller with 256K external cache
- One Parallel and two serial ports OR one parallel, one serial port and one mouse port
- 15" Color monitor with a minimum of 1024 x 768 pixel resolution with .28 dot pitch, noninterlaced
- Windows accelerator PCI bus graphics controller to support minimum 1024 x 768 resolution at 256 colors (in noninterlaced mode) with 1 MB RAM upgradeable to 2 MB RAM
- 2 button high resolution mouse (Microsoft or Logitech Series 9 Standard - not required for Tier One Systems)
- 101 key heavy duty keyboard (Keytronics KT2000 Series Standard - Not required for Tier One Systems)
- Three year warranty - 1 year on site - parts and labor, 2nd and 3rd years - parts and labor. Warranty to include: system, monitor and all peripherals
- Energy Star compliant and FCC Class B approved
- Novell Certified with documented proof supplied with bid response
- Installation, training, and setup (to be scheduled by the school district)

**OPTIONS:**

- **Multimedia Upgrade to include:**
  - Internal CD-ROM - Quad-Speed, multi-session, photo CD compatible with controller, 16 bit sound card or equal (Sound Blaster compatible), Speakers, 16 MB RAM for system unit
- **FAX/Modem Upgrade to include:**
  - 28.8 Internal modem with Group 3 fax capability and communications/fax software
- **If Networked, Upgrade to include:**
  - Ethernet card with RJ45 10 BaseT connector, ODI driver software, and Lanworks Boot PROM, 16 Bit (Microdine, SMC, 3Com, or Intel)

## PC MULTIMEDIA /TEACHER PRESENTATION SYSTEM

- MS-DOS Operating System with utilities, version 6.22 (or latest release)
- Windows 3.11, or Windows NT Workstation 4.0, or Windows 95
- PCI/ISA bus motherboard - a minimum of 2 ISA/ISA vacant expansion slots after full base configuration to include network interface card
- System unit with 16 MB RAM - (two - 8 MB SIMMs) expandable to128 MB RAM on the motherboard with 72 pin SIMM sockets
- Pentium 90/100 Mhz microprocessor
- One 3.5" high density floppy disk drive (1.44 MB)
- One 850 MB hard disk with EIDE or SCSI controller with 256K external cache
- One Parallel and two serial ports OR one parallel, one serial port and one mouse port
- 15" Color monitor with a minimum of 1024 x 768 pixel resolution with .28 dot pitch, noninterlaced
- Windows accelerator PCI bus graphics controller to support minimum 1024 x 768 resolution at 256 colors (noninterlaced mode) with 1 MB RAM upgradeable to 2 MB RAM
- Must be Novell certified
- 2 button high resolution mouse (Microsoft or Logitech Series 9 Standard - not required for Tier One Systems)
- 101 key heavy duty keyboard (Keytronics KT2000 Series Standard (not required for Tier One Systems)
- Energy Star compliant and FCC approved
- Installation, training, and setup (to be established by local district)
- Multimedia Upgrade to include: Internal CD-ROM - Quad-Speed, multi-session, photo CD compatible with controller, 16 bit sound card or equal (Sound Blaster compatible), Speakers with AC power supply
- Three year warranty on parts and labor

**OPTIONS:**

- **FAX/Modem Upgrade to include:**
  - 28.8 Internal modem with fax capability and communications/fax software
- **If Networked, Upgrade to include:**
  - Ethernet card with RJ45 10 BaseT connector, with ODI driver software, 16 Bit (Microdine, SMC, 3Com, or Intel), and Lanworks Boot PROM

## MACINTOSH PLATFORM

- Motorola 68040 (66 Mhz) or PowerPC processor (75 Mhz)
- 8 MB RAM (expandable to 72 MB), 500 MB hard disk drive, CD-ROM drive, keyboard and mouse
- SuperDrive floppy disk drive (R/W Macintosh, Windows, MS-DOS, OS/2 and Prodos formats)
- color display capable of displaying 640x480 pixels at 32,000 colors
- 8 Bit audio in/out stereo speakers and microphone
- 3 Expansion slots for LC processor direct card, networking card, and video capture card
- Macintosh 0/S system 7.5 including QuickTime, Apple Guide, File Sharing, and TrueType software
- Energy Star compliant and FCC approved

**OPTIONS:**

- Ethernet adapter for 10 Base2, 10 BaseT and 10 Base5 cabling
- Video-in card for video capture from video camera, VCR or laserdisc
- Video-out connector to LCD projection panel or second monitor
- Adapter for video-out to TV monitor or VCR recorder

## MACINTOSH MULTIMEDIA AND PRESENTATION EQUIPMENT

- 100 Mhz Power PC 603e processor with level 2 cache
- 16 MB RAM expandable to 64 MB
- Apple SuperDrive (R/W Macintosh O/S, Windows, OS/2, and Prodos)
- Internal 1 GB hard disk drive
- Internal Quad-Speed CD-ROM drive
- 15 Inch multiple scan display supporting 32,000 colors
- Processor direct slot for expansion
- I/O Communications slot for Ethernet adapters
- Video out connector for connecting to LCD panel or second monitor
- Video capture card to record video from camcorder, VCR, or laserdisc
- Built in TV tuner
- 16 Bit stereo sound in/out
- Macintosh O/S System 7.5 including QuickTime, Apple Guide, File Sharing and TrueType Software

## CROSS PLATFORM WORKSTATIONS
## (Based on Power PC 601 Processor)

- PowerPC 601 microprocessor running at 66 Mhz
- 256K level - 2 cache for enhanced performance
- 16 MB RAM, expandable to 72MB
- Internal 500 MB Hard Drive
- Internal quad-speed CD-ROM Drive
- SuperDrive floppy disk drive (R/W Macintosh, Windows, MS-DOS, OS/2 and Prodos formats)
- Video out ports
- Stereo 16 bit audio in/out
- Color display capable of displaying 640 x 480 pixels at 32,000 colors and 800 x 600 pixels at 256 colors
- Built in Ethernet port
- Macintosh O/S System 7.5, including Quicktime, Apple Guide, File Sharing and TrueType software
- DOS compatibility card providing:
  - 486 microprocessor running at 66Mhz
  - SIMM slot for up to 32 MB of local memory, capable of sharing memory on Macintosh logic board and/or accessing local memory
  - 512k video RAM
  - SoundBlaster 16 - 16 bit stereo sound output
  - Video support for Apple 13, 14, and 16 inch displays as well as VGA and SVGA displays
  - Support for Apple SuperDrive, internal hard disk and CD-ROM drive
  - Support for TCP/IP Novell NetWare Protocols
  - MS-DOS Operating System with utilities, version 6.22 (or latest release)
  - Windows 3.11, or Windows NT Workstation 4.0, or Windows 95

**OPTION:**

- Adapter for video out to TV monitor or VCR recorder

## LAPTOP COMPUTERS

## PC PLATFORM

### ENTRY LEVEL LAPTOP

- 486 DX 4/75 Microprocessor
- 8 MB RAM
- 500 MB Hard Disk Drive
- One Type III PCMCIA slot usable for two type I/II slots
- Built in Point Device (Accu-point type or mini trackball)
- DSTN Color Display
- 3.5" Floppy disk Drive (external or internal)
- 1 year Warranty
- AC adapter (preferably built in)

### MULTIMEDIA CAPABLE LAPTOP - (ENTRY LEVEL)

- Pentium 75 or 90 Microprocessor (2.9 volt)
- 16 KB Internal cache
- 8 MB RAM expandable to 40 MB
- 700 MB Hard Disk Drive
- One Type III PCMCIA slot usable for two type I/II slots
- Built in Point Device (Accu-Point type or mini trackball)
- 9.5" or larger TFT Color Display
- 3.5" Floppy Disk Drive (external or internal)
- Built in Sound Card (Sound Blaster compatible)
- Quad Speed CD-ROM Drive (internal or external)
- Local Bus Video with 1 MB DRAM
- Graphics Accelerator
- Lithium Battery
- 1 Year Warranty
- AC Adapter (preferably built in)

### MULTIMEDIA CAPABLE LAPTOP - (High End)

- Pentium 120 Mhz Microprocessor
- PCI Bus
- 16 MB RAM expandable to 40 MB
- 1.3 GB Hard Disk Drive (removable)
- One Type III PCMCIA slot usable for two type I/II slots
- Built in Point Device (Accu-Point type or mini trackball)
- 11.3" TFT Active Matrix Color Display 800 x 600 SVGA
- 3.5" Floppy Disk Drive (external or internal)
- 16 Bit Built in Sound Card (Sound Blaster compatible)
- Stereo speakers (built in)
- Quad Speed CD-ROM Drive (internal or external)
- Local Bus Video with 1 MB DRAM

*Multimedia Capable Laptop - (High End) - Continued*

- Graphics Accelerator
- Lithium Battery
- 1 Year Warranty
- AC Adapter (preferably built in)

**MAC PLATFORM**

**Level I Laptop**

- 66/33 Mhz 68LC040 Microprocessor
- 4 MB RAM expandable to 36 MB
- 3.5" Apple Super Drive
- Gray Scale Display
- 500 MB Internal Hard Disk Drive
- 9.5" Backlit Display, passive matrix, 16 level gray scale
- PCMCIA Card Slot to accommodate two Type I/II PC cards or One Type III Card
- Serial/Local Talk port for AppleTalk connection to network & Printers
- SCSI Port
- Nickel - Metal - haydride battery
- 16 Bit, CD Quality sound with built in speakers and integrated microphone

**Level 2 Laptop**

- 66/33 Mhz 68LC040 Microprocessor
- 4 MB RAM expandable to 36 MB
- 3.5" Apple Super Drive
- 10.4" Color Display (supports 256 colors)
- 500 MB Internal Hard Disk Drive
- PCMCIA Card Slot to accommodate two Type I/II PC cards or one Type III Card
- Serial/Local Talk port for AppleTalk connection to network & printers
- SCSI Port
- Nickel - Metal - haydride battery
- 16 Bit, CD Quality sound with built in speakers and Integrated microphone

**Level 3 Laptop**

- 100 Mhz 603e RISC Microprocessor
- 8 MB RAM expandable to 64 MB
- 3.5" Apple Super Drive
- 500 MB Internal Hard Disk Drive
- 9.5" Backlit Display, passive matrix, 16 level gray scale
- PCMCIA Card Slot to accommodate two Type I/II PC cards or One Type III Card
- Stereo sound input and output ports
- Serial/Local Talk port for AppleTalk connection to network & printers
- SCSI Port
- Nickel - Metal - haydride battery
- 16 Bit, CD Quality sound with built in speakers and integrated microphone

**Level 4 Laptop**

- 100 Mhz 68LC040 Microprocessor
- 16 MB RAM expandable to 64 MB
- 3.5" Apple Super Drive
- 750 MB Internal Hard Disk Drive
- 10.4" Backlit active matrix color SVGA display, 1 MB VRAM
- PCMCIA Card Slot to accommodate two Type I/II PC cards or one Type III Card
- Serial/Local Talk port for AppleTalk connection to network & Printers
- SCSI Port
- Serial RS-232 port
- Stereo sound input and output ports
- Nickel - Metal - haydride battery
- 16 Bit, CD Quality sound with built in speakers and integrated microphone

## NETWORK SPECIFICATIONS

### PC PLATFORM FILE SERVER

- MS-DOS operating system Version 6.22
- Windows 3.11, or Windows NT Workstation 4.0, or Windows 95
- PCI/ISA bus motherboard (must be "plug and play" compatible)
- Pentium 100 Mhz Microprocessor
- Medium or Full Desktop case to be mounted in the 19" equipment rack on an equipment shelf
- 32 MB RAM expandable to 128 MB RAM on the motherboard with option for vendor buy back during warranty period
- SIMM sockets must be 72 pin
- 1.2 GB SCSI hard disk drive with a PCI bus SCSI-2 (Novell Certified) or EIDE 32 bit controller
- Three (3) vacant expansion slots, one PCI and two ISA/ISA shared slots available after base configuration
- One 3.5" high density 1.44 MB floppy disk drive
- One parallel port and two serial ports OR one parallel, one serial, and one mouse port
- 15" color video monitor with a minimum of 1024 x 768 pixel resolution with .28 dot pitch, noninterlaced
- Windows accelerator PCI bus graphics controller to support minimum 1024 x 768 resolution at 256 colors (in noninterlaced mode) with 1 MB RAM
- System must be 100% capable of functioning as a Novell NetWare Version 3.12 file server
- 2 button high resolution mouse (Microsoft or Logitech Series 9 Standard - not required for Tier One Systems)
- 101-key heavy duty keyboard (Keytronics KT2000 Series Standard - not required for Tier One Systems)
- Ethernet Network Interface Card, with RJ45 10 BaseT connector, 32 bit, with ODI software driver, 16 bit (Microdine, SMC, 3Com, or Intel)

*PC Platform File Server continued-*

- Internal CD-ROM - Quad-Speed
- Three year warranty - 1 year on site with parts and labor, 2nd and 3rd years to include parts and labor, warranty must include : System, monitor, and all peripherals
- Energy Star compliant and FCC Class B approved
- Novell Certified with documented proof supplied with bid response
- All necessary system connectivity wiring and cables
- Installation, setup, and training scheduled by the district.

**MACINTOSH FILE/PRINT OR INTERNET SERVER**
**FOR MULTIPLE SCHOOLS OR DISTRICT WIDE USE**

- PowerPC 601 processor running at 120 Mhz
- 256K Level 2 cache
- 16 MB RAM expandable to 264 MB
- 2 Internal Disk Drives 1 GB each
- DDS-2 DAT Drive
- CD-ROM drive, floppy disk drive, keyboard, and mouse
- Built in Ethernet adapter with AUI connector
- Video port for display
- 2 high speed SCSI DMA buses
- Four Nubus expansion slots
- Macintosh O/S 7.5, RAID Software, AppleShare server software and client software for Macintosh and Windows clients

**MACINTOSH FILE/PRINT OR INTERNET SERVER**
**FOR SINGLE CLASSROOM**

- PowerPC 601 processor running at 66 Mhz
- 256K Level 2 cache
- 16 MB RAM expandable to 72 MB
- Internal Disk Drive 700 MB
- CD-ROM drive, floppy disk drive, keyboard and mouse
- Built in Ethernet adapter with AUI connector
- Video port for display
- SCSI Interface for external devices
- Processor direct expansion slot
- Macintosh O/S 7.5, RAID Software, AppleShare server software and client software for Macintosh and Windows clients

**MACINTOSH FILE/PRINT OR INTERNET SERVER**
**FOR MULTIPLE CLASSROOM OR SCHOOL WIDE USE**

- PowerPC 601 processor running at 110 Mhz
- 256K Level 2 cache
- 16 MB RAM expandable to 264 MB
- Internal Disk Drives 1 GB
- DDS-2 DAT Drive
- CD-ROM drive, floppy disk drive, keyboard and mouse
- Built in Ethernet adapter with AUI connector
- Video port for display
- Two high speed SCSI DMA buses
- Three Nubus expansion slots
- Macintosh O/S 7.5, RAID Software, AppleShare server software and client software for Macintosh and Windows clients

**WINDOWS NT SERVER 3.51 FILE/PRINT OR INTERNET SERVER**
**FOR SINGLE CLASSROOM OR CAMPUS**

- Provides World Wide Web services with CGI scripting and forms, FTP services, and Telnet capabilities
- Windows NT Server 3.51 Operating System
- Pentium 75 Mhz processor
- PCI/ISA bus motherboard - minimum of two ISA/ISA shared vacant expansion slots after full base configuration to include network interface card
- One quad-speed CD-ROM drive
- One 3.5" high density floppy disk drive (1.44 MB)
- One GB hard disk drive with EIDE or SCSI controller and 256 K external cache
- System unit with 32 MB RAM with planar expansion to 128 MB using 72 pin SIMM sockets
- One parallel port, one serial port, one mouse port; OR one parallel port, two serial ports
- Windows accelerator PCI bus graphics controller to support minimum 1024 x 768 resolution at 256 colors in non-interlaced mode with 1 MB RAM upgradeable to 2 MB RAM
- Two button high resolution mouse (Microsoft or Logitech Series 9 Standard - not required for Tier One Systems)
- Dual speed Ethernet Combo NIC for running at 10 Mbps or 100 Mbps
- 15" Non-interlaced color monitor 1024 x 768 pixel resolution at .28 dot pitch
- 101-key heavy duty keyboard (Keytronics KT2000 Series Standard - Not required for Tier One Systems)
- Three year warranty - One year on site with parts and labor - Second and Third years parts and labor
- Energy Star compliant and PCC Class B approved
- Installation, training, and setup (to be scheduled by the school district)

## NETWORK WIRING SYSTEM

- Network installation must include **ALL** wiring, cables, and software. All software must be loaded on the file server and not on individual workstation PC's and functioning properly to print to **ALL** printers from **ALL** software packages available on the network.
- All network wiring must be Category 5 unshielded twisted 4 pair cable capable of supporting 100 Mbps data transmission rates using EIA 568B connector pin specifications
- All interconnecting cables must be supplied and terminated with approved RJ45 connectors properly installed to meet 100 Mbps data rate standards
- Installation must meet all local fire and building codes
- Wiring and cables are to be installed in a non-exposed configuration using raceways, junction and breakout boxes, etc. Wiring must not be exposed to the student's work environment

## NETWORK HUB

- Stackable Ethernet hub(s) [non managed] with RJ45/10 BaseT connector, 36 ports
- 19" equipment rack mounting kits. - Hubs are to be installed and mounted in a 19" equipment rack
- All cables must be bundled and secured in accordance with industry accepted standards

## EQUIPMENT RACK

- Industry standard 19" free standing open frame aluminum equipment rack, approximately 72" tall, secured to the classroom/laboratory floor with anchor bolts and to the wall, all active network components including network hubs, routers, communications equipment, server and monitor with keyboard, and the Uninterruptable Power Supply (UPS) must be properly mounted in the rack and all associated wiring must be properly dressed to meet all building and telecommunications codes. ***Note:*** *Refer to file server specifications.*

## NETWORK OPERATING SYSTEM SOFTWARE

- Novell Advance NetWare Version 3.12 or equal
- Specifications for Network operating system software - Novell NetWare 3.12.

## PC COMPATIBLE PRINTER SPECIFICATIONS

### DOT MATRIX PRINTERS
### (Single Workstation Application)

- 24 pin dot matrix print head
- Bi-directional printing with logic seeking in text and graphics modes
- Print Speed: High speed draft 300 cps at 10 cpi
  413 cps at 15 cpi
  330 cps at 12 cpi
  Letter Quality 138 cps at 15 cpi
  110 cps at 12 cpi
- Column Width: Pica (10 cpi) 80
  Elite (12 cpi) 96
  Condensed Pica 137
  Condensed Elite 160
- Paper Feed: Push pull tractor for rear, front, and bottom feed
  Automatic fanfold paper loading
  Automatic single sheet paper stacking
  Friction feed
- Resolution: 360 x 360
- Paper Feed Speed: 56 milliseconds per line at 1/6" line spacing
  3.6" per second continuous feed
- Input Buffer: 8 kb
- Interface: Centronics compatible 8-bit parallel
- Emulation: Epson ESC/2, fully backward compatible with Epson ESC/P
- Fabric Ribbon: Black - 2 million characters at 48 dots/character
- Film Ribbon: 0.2 million characters at 48 LQ dots/character
- Mean Time Between Failure: 4,000 power-on hours (25% duty cycle)
- Built-in Fonts: 12 with 2 scalable fonts
- Warranty: 2 year limited

### DOT MATRIX PRINTERS
### (High Speed Continuous Heavy Duty Network Printer)

- 9 pin dot matrix print head
- Push tractors (front and rear)
- Must be Epson ESC/P command compatible
- Automatic interface selection
- Printing speed:
  10 Pitch - high speed draft mode - 560 cps
  10 Pitch - near letter quality mode - 84 cps
- Wide carriage - 15"
- Bi-directional logic seeking for text printing
- Paper feed speed:
  continuously - 17 ms/line (10 inches/second)
  intermittently - 26 ms/line

*Dot Matrix Printers (High Speed Continuous Heavy Duty Network Printer) continued -*

- Buffer 20 KB
- Paper capability: Continuous feed, 6 sheets front, 4 sheets rear
- Cartridge ribbon
- Mean Time Between Failure: 8,000 power-on hours (25% duty cycle)
- Print head life - 300 million characters at 14 dots per character
- One serial interface RS-232C asynchronous, 300-9600 bps
- One parallel interface - Centronics
- Floor stand with paper basket/catch tray
- One 10 ft. parallel cable
- One year parts and labor warranty

**LASER PRINTERS**

*HP Laserjet 4 Plus or Lexmark Optia R with the following features:*

- 2 MB memory with expansion capability
- 250 sheet capacity paper tray
- Manuals and startup supplies
- Windows 3.11, Windows NT, Windows 95 and DOS Software drivers
- One year warranty
- One 10 ft. parallel interface cable
- **OPTION**:
  HP JetDirect or Lexmark Ethernet Network Interface with RJ45 connector

**PC COLOR INK JET PRINTERS**

- Letter quality mode: 300 x 300 dpi
- Draft quality mode: 300 x 150 dpi
- Print command language HP PCL level 3
- Plain paper printing
- Black Print Speed:
  - MS Windows Black Print Speed
    - Presentation mode: 1 page per minute
    - Normal mode: 2 pages per minute
    - Draft mode: 3 pages per minute
  - DOS Black Mechanical Speed
    - Letter quality: 167 cps at 10 cpi
    - Draft mode: 240 cps at 10 cpi
- Full page color print speed:
  - MS Windows color print speed
    - Presentation mode: 7 minutes per page
    - Normal mode: 4 minutes per page
    - Draft mode: 3 minutes per page
- Built-in Fonts - 6
- Paper size 8.5" x 11"
- Dual I/O Interface:
  - RS - 232-C serial

*PC Color Ink Jet Printers continued -*

- Centronics Parallel
- Ink Cartridges (both installed at the same time):
  1 black and 1 color
- Buffer size: 80 KB receive buffer
- With 10 ft. parallel cable

**APPLE/MAC COMPATIBLE INK JET PRINTERS**

**StyleWriter 1200**

- Ink Jet technology
- 720 x 360 dpi resolution in black and white
- 360 x 360 dpi in gray scale
- 64 TrueType fonts

**StyleWriter 2200**

- Ink Jet technology
- 360 x 360 dpi in 4 color and gray scale
- 5 pages per minute print speed
- Built in 30 sheet feeder
- 64 TrueType Fonts

**StyleWriter 2400**

- Ink Jet technology
- 360 x 360 dpi color printing
- 720 x 360 dpi in black and white
- 5 pages per minute print speed in black and white
- 1 page per 3 minutes print speed in color
- Built in 30 sheet feeder
- 64 TrueType Fonts

**StyleWriter Pro**

- Ink Jet technology
- 360 x 360 dpi color printing
- 2 pages per minute print speed in black and white
- 64 TrueType fonts
- Network ready

## APPLE/MAC COMPATIBLE LASER PRINTERS

**LaserWriter 4/600 PS**

- 4 pages per minute print speed
- 600 dpi resolution
- 126 shades of gray
- Network ready
- Local Talk
- Serial
- 64 TrueType fonts
- 35 Post Script fonts

**LaserWriter Select 30**

- RISC Processor
- 10 pages per minute print speed
- 600 dpi resolution
- Network ready - Plug and Play

**LaserWriter 16/600**

- RISC Processor
- 17 pages per minute print speed
- 600 dpi resolution
- Network ready - Plug and Play

## TELECOMMUNICATIONS EQUIPMENT

### ROUTER FOR SCHOOL DISTRICT OFFICES
### (Includes Dial-Up Capabilities)

*Check the ITS General Bid RFP #2749 for CISCO 2509 router selection.*

- One TCP/IP Router, one Ethernet port, two serial ports, 8 asynchonous ports
- One 8 lead octal cable with software to provide PPP dial-up access to 8 asynchronous router ports
- One male DET V.35 interface cable
- One AUI-to-RJ45 Transceiver
- Internetwork Operating System (IOS-SF25E-11.X) supports Frame-Relay, Apple, IP, IPX
- Router and IOS software maintenance

### ROUTER FOR SCHOOL SITES

*Check the ITS General Bid RFP #2749 for CISCO 2514 router selection.*

- One TCP/IP Router with two Ethernet ports, two serial ports
- One male DET V.35 interface cable
- One AUI-to-RJ45 Transceiver
- Internetwork Operating System
- Router and IOS software maintenance

### CSU/DSU FOR 56 Kbps CONNECTIVITY

*Check the ITS General Bid RFP #2782 for TxPort 4101 CSU/DSU selection.*

- One CSU/DSU with SNMP/V .35 Interface/Telnet/Ethernet/5-year warranty
- Two CSU/DSUs may be required (where point-to-point connections are established)

### DCU/CSU FOR T1 (1.54 Mbps) CONNECTIVITY

*Check the ITS General Bid RFP #2782 for TxPort 3101 CSU/DSU selection.*

- One CSU/DSU with SNMP/V .35 Interface/Telnet/Ethernet/5-year warranty
- Two CSU/DSUs may be required (where point-to-point connections are established)

### RACK-MOUNTED HIGH DENSITY 28.8 ASYNCHRONOUS DATA/FAX MODEM BANK

- One 19" AX/Chassis 8-modem capacity with power supply and common back-plane
- Eight 28.8 Kbps Rack-mountable Modem Cards with MNP 10 and Group 3 Fax
- Eight 10' standard modem cables

## INTERNET PROVIDER

Careful consideration for selecting an Internet provider should be made only after consultation with the MDE - MIS networking office at (601) 359-3487 to determine the best alternative available services for each district. Current information regarding the status of the Statewide Network may affect district planning.

## COLOR DISPLAY PROJECTION PANEL

- LCD Display Panel - Sharp Model 1150 Color Display Panel
- 640 x 480 pixel resolution, 16,000 colors

## SVGA TO NTSC VIDEO OUTPUT SCAN CONVERTER

- Built-in 3 watt audio amplifier, volume control, microphone and preamplified audio input
- Computer to converter, converter to monitor, and video out cables
- Hardware flicker filter
- Must support 640 x 480 resolution through 24 bit color depth
- Simultaneous use of a standard VGA monitor and a standard NTSC device such as a VCR, etc.
- Standard 15 pin VGA input/output connectors
- RCA phono and S-video connectors
- Must not require software driver(s)

## OTHER EXTERNAL EQUIPMENT

- High Intensity Overhead Projector - minimum of 7500 lumen output
- Laser Disc Player

## TAPE BACKUP UNIT

- Internal DAT tape backup drive (SCSI), server based solution, must be Novell NetWare Version 4.1 compatible with 256 KB cache with a single tape capacity of 2 GB (native - uncompressed)
- Novell NetWare Version 4.1 server/based NLM's backup software compatible with above SCSI tape backup unit (must support DOS, OS2, MACINTOSH, and NFS name spaces)
- 3 blank data tapes (each tape should be single tape capacity of 2 GB)

## CD-ROM SYSTEM (NETWORK BASED)

- CD-ROM tower server system box to include:
  - One Quad-Speed multi-session CD-ROM disk drive
  - self-contained hardware/software solution for making all CD-ROM resources available and accessible across a Novell Version 4.1 network.
- Connection to the network must be via an Ethernet or Discport interface and driver software
- CD-ROM server must have the capacity to hold and support up to a minimum of 3 additional internal CD-ROM drives.

## UNINTERRUPTABLE POWER SUPPLY (UPS)

Depending upon the power requirements of all hardware enclosed within a 19" rack, a calculation should be made to determine which UPS to purchase. Calculate the number of watts required to run each piece of hardware. Multiply the number of watts times 1.4 to find Volt Amps (VA). Use this total to determine which UPS to purchase.

**UPS with 700 VA Power Requirement**

- One Smart Uninterruptable Power Supply (UPS) with optional PowerChute Software and cabling for server, rack-mountable, 700VA

**UPS with 1400 VA Power Requirement**

- One Smart Uninterruptable Power Supply (UPS) with optional PowerChute Software and cabling for server, rack-mountable, 1400VA

**UPS with 2000 VA Power Requirement**

- One Smart Uninterruptable Power Supply (UPS) with optional PowerChute Software and cabling for server, rack-mountable, 2000VA

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